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C.F.T.R.I., MYSORE

CSMCRI Installs Industrial Solar Hot Water Unit

ar hot water demonstration unit een designed and installed by the al Salt & Marine Chemicals arch Institute (CSMCRI), nagar, at Jehangir Textile Mills, edabad. The first ever industrial hot water unit to be installed on uth sloping roof of a textile mill, it ies 6000 litres of hot water at 80°C. e unit consists of four parallel s of flat-plate collectors, each array sting of 12 single and 6 double glass d flat-plate collectors with non- ive black-painted absorbers and 5 acrylic sheet glazed flat-plate ctors with selective coating. The m has been provided with thermos- controls in such a way that hot at 80° ± 5°C only flows out. The of feed water to each array is tored through rotameters.

The unit was commissioned on 2 May 1981 by Shri Maheshwar Dayal, Secretary, Commission for Additional Sources of Energy, and Advisor to the Department of Science and Technology. □

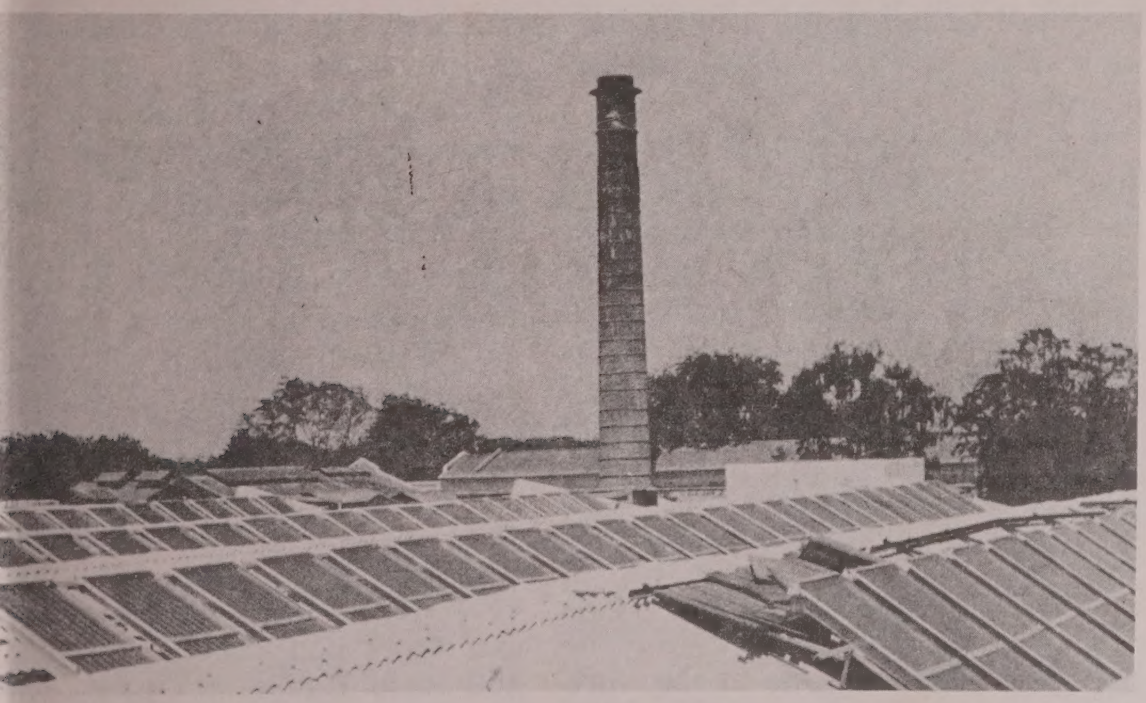
NGRI Commissions Second Deep Drilling Rig for Groundwater

Under a joint groundwater exploration programme, the National Geophysical Research Institute (NGRI), Hyderabad, and the Central Groundwater Board (CGWB) have commissioned the second deep drilling rig for groundwater at Peddapuram, East Godavari dist., Andra Pradesh. The 'Failing 3000 CF' rig, gifted to NGRI by the Federal Republic of Germany, is a water well rig designed for drilling deep, large-diameter commercial wells down to 1000 m. The first phase of the operations is already under way in Puduvayal village, Chingleput dist., Tamil Nadu.

The aim of the present phase of the programme is to identify the capacity of water-bearing zones available beyond 600 m depth and down to 1000 m, specially by penetrating the Deccan Traps and also the saline zones in aluvium.

Shri T. Anjiah, Chief Minister of Andhra Pradesh, commissioned the drilling rig at Peddapuram on 19 May 1981. In his address, the Chief Minister said that every village in the state would have at least one borewell by next year. Referring to finances, the Chief Minister said the state government would not hesitate to spend any amount for providing drinking water to the people. He stressed the need for 'permanent projects to relieve people of the drinking water problems'. He also stated that the state government would take the help of scientists and possibly also reward those scientists engaged in exploring the water resources of the state.

Shri S. Venkata Reddy, A.P.'s Minister for Mines and Geology, presided over the function.



lar hot water unit installed by CSMCRI at Jehangir Textile Mills, Ahmedabad

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Dr S. Balakrishna of NGRI outlined the salient features of the rig and said the collaboration of FRG with NGRI and CGWB had led to the tapping of groundwater in various parts of A.P.

Prof. E. Boeckh, Hydrogeologist, Federal Institute of Geosciences and Natural Resources, FRG, who represented his country, extended greetings from FRG on the success of the groundwater exploration programme. Shri K.C.B. Raju of CGWB, speaking on the development and importance of groundwater resources, said that on completion of the drilling operations at Peddapuram, the rig would be moved to Kesavaram, Ramachandrapuram, Alamuru, Tallarevu, and other places in A.P.

Shri Anjiah also inaugurated a mobile 24-channel high-resolution digital seismic system, which NGRI has acquired from a U.S. firm at a cost of Rs 18 lakh. □

CFTRI Commissions Orange Juice Processing Plant in Burma

An orange juice processing plant installed by the Central Food Technological Research Institute (CFTRI), Mysore, at the Central Research Organisation (CRO), Rangoon, has been commissioned by CFTRI engineers. The plant was supplied to CRO by the Government of India, through the National Research Development Corporation of India, under its Technical and Economic Cooperation Programme. The plant can produce orange juice (single strength), orange squash, orange concentrate, and orange peel oil. Though designed to process oranges, it can also process juice from other fruits like apple and pineapple.

The main unit of the plant is the orange juice extractor, which can handle one tonne of oranges per hour. The machine was designed and developed at CFTRI. It handles whole fruits, cuts them into halves and extracts juice. The juice obtained is clear, with minimum of bitterness and pulp, and can be concentrated to 70° Brix without borate juice clarification operation

New Building Materials and Techniques of Construction: CBRI's Get-together

A get-together-cum-exhibition on 'Recent Developments in Building Materials and Techniques' was organized at Bhopal by the Central Building Research Institute (CBRI), Roorkee, in collaboration with the Madhya Pradesh Housing Board and the Institution of Engineers (I) India, State Centre, Bhopal. The purpose of the get-together, as pointed out by Prof. Dinesh Mohan, CBRI's Director, was to acquaint field engineers, architects, builders, materials manufacturers and others with the latest building materials and construction techniques which could help solve the acute shortage of scarce building materials besides reduce the overall cost and time of construction. Prof. Mohan highlighted several of CBRI's techniques which are now being used all over the country, and have saved crores of rupees to the nation. He specifically mentioned under-reamed and bored compaction pile foundation techniques, which are now being adopted by the developing countries. For use in rural areas where mud walls and thatched roofs are still predominant, he said, the institute had developed techniques for making mud walls waterproof and the thatches fire-retardant.

Shri Prabhash Chandra Shekhar, State Minister for Housing and Environment, who inaugurated the get-together, emphasized the need for solving the formidable problem of housing the teaming millions in rural as well as urban areas, and called upon the state engineers and architects and all those concerned to adopt the new and alternative building materials and techniques developed by CBRI. The Chairman of M.P. Housing Board, Shri Amolak Chand Chhajed, who was the chief guest, spoke highly of the work done by CBRI.

In his talk, Dr G.W. Kapse (CBRI) called upon the building industry materials manufacturers of Mad Pradesh to make greater use of CB expertise for making good bricks f black cotton soils and red soils. suggested how they could help nation by manufacturing the sev useful building materials from indust and agro-industrial wastes, like fly a slags, mining rejects, rice husk, coco fibres, and lime kiln rejects, which p many problems of disposal a environmental pollution.

Talking on planning, design, a construction techniques, Shri S Chakraborti (CBRI) highlighted pioneering work of the institute foundation engineering and pointed that in black cotton soils, CBR technique of under-reamed pile fou dation are 20 to 50% cheaper th conventional foundations, and CBR bored compaction piles are ideal a economical for reclaimed and filled- areas. For oils rigs and other structur he advocated the concept of partia retrievable foundation to effect furth economy.

For low-cost housing in black cott soil areas, he said that pedestal pil recently developed by CBRI, prov more economical than the und reamed piles. Chakraborti also highl hted several other CBRI's techniqu viz. stone masonry blocks for wallin channel units, cored units, R.C. plank prefabricated brick panels, waffle uni etc. for flooring/roofing, which could easily adopted for building better, fast and economic houses. These technique he said, were now being used by vario housing boards, state and central publ works departments, developme authorities, Military Engineer Servic and other construction agencies. H also mentioned about CBRI's work o water-proofing of mud walls and fir retardant treatment of thatch, which a

on for housing the rural poor and weaker sections of the society. and window frames from saw dust magnesium oxychloride cement replace timber frames con- ably and also overcome the em of warping of timber, he said. ntroduction of single-stack system ilding drainage and PVC pipes in of GI pipes could go a long way in cing the cost of services, he added.

Shri G.G. Puri (Resources Development Institute, Bhopal) suggested various ways and means to make appropriate technology successful. Shri B.D. Sharma (CBRI) proposed that some obligatory measures should be worked out so that state agencies could be helped in adopting CBRI processes, plants and techniques. He felt the need for improving the transfer of CBRI technologies. □

Improvement in Betel Vine Cultivation
GROUP DISCUSSION AT NBRI

oup discussion of scientists engaged tel vine research on 'Improvement etel Vine Cultivation' held at the onal Botanical Research Institute RI), Lucknow, on 27-28 February focussed attention on the problems e betel vine industry and evolved an strategy to fight the diseases ting this important plant as well as related problems, and thereby iorate the lot of *pan* growers. ussions on 32 papers presented in technical sessions, viz. diseases pests, agronomy, and physiology biochemistry, led to the adoption of l-point recommendation at the ary session.

major recommendation that em- d from the discussions was that a onal project on improvement of vine cultivation should be ulated.

hrough other recommendations, the p called for: (i) collection of wild cultivated types of *pan* (*Piper betle* .) together with female plants of the ies, and maintenance and classifi- on of the germ-plasm collected using phological, biochemical, ultrastruc- l and phytochemical approaches, at e centres in representative agroc- tes in the northern, eastern and hern regions; (ii) studies on re- nse of betel vine to inorganic and nic fertilizers, varying moisture mes as also its reaction to ronmental factors influencing leaf lity; (iii) comprehensive survey of tations to record the incidence of diseases, pests, including nematodes, and field susceptibility of the existing types to various diseases and pests; (iv) study of the soil-plant-microbes inter-relationships and the interactions and influence of various cultural practices and environmental conditions on leaf quality; (v) systematic trials to test the efficacy of modern fungicides and insecticides keeping in view their biodegradation in the plant system; (vi) exploring the possibility of selecting microorganisms to inhibit the growth of soil-borne pathogens; (vii physiological and biochemical studies aimed at increasing the shelf life as also development of appropriate methods for extended storage; and (viii) phytosanitary measures and other management practices to reduce the incidence of diseases as well as the cost of maintenance of plantation.

The group also emphasized the need for making available training facilities in modern methods of betel vine culture to farmers, and the preparation of a state of the art report on *pan* and holding of get-togethers of scientists working on the crop to facilitate exchange of information and chalk out research strategies.

Dr G. Rangaswami, Adviser (Agriculture), Planning Commission, in his key-note address, stressed the need for coordinating research work in the systematics and classification of biotypes of *P. betle*, and on production technology covering agronomy, plant protection, harvesting, packing, storage, transport, and distribution, and biochemistry of the plant in different regions of the country.

Thrity-five delegates representing Tamil Nadu, Maharashtra, Orissa, West Bengal, Madhya Pradesh, and Uttar Pradesh, as also representatives of betel vine growers' associations of Patna, Mahoba and Lucknow, participated in the discussions. □

CFRI Develops Novel Sponge Iron Production Process

The Central Fuel Research Institute (CFTRI), Dhanbad, has developed a novel process (patent filed) for the production of sponge iron. While known technologies involve reduction of iron ore by gases generated by gasification of coal or char, in the CFRI process no external reductant is necessary. Further, the process does not, involve, unlike in the conventional process, fine grinding either of the iron ore or the reductant non-coking coal before its pelletization and subsequent reduction. In this process, the reduction is intrinsic and takes place in the briquettes, pellets or extruded shapes made out of the essential ingredients. This breakthrough has been possible by a judicious incorporation of the reductant (coal) in the matrix of the iron fines in the form of preformed shapes which, when suitably treated in a furnace, leads to production of sponge iron lumps of desired shape, size, and weight. The sponge iron is suitable for being charged into blast furnace or directly into steelmaking furnaces. The process is self-supporting insofar as its fuel requirement is concerned. The treatment of the preformed shapes generates 12,000-15,000 cu ft of gas per tonne of sponge iron produced; the calorific value of the gas is 220 Btu per cu ft, which is much richer than that of the blast furnace gas. This quantity of gas is more than sufficient for sustaining the required temperature gradient in the furnace wherein direct production of sponge iron takes place, involving induration, reduction and incipient

fusion—all in one step. Fuel efficiency of the process is highest amongst all the sponge iron processes so far known.

The process: Iron ore fines of suitable quality are ground through 3 mm, mixed with non-coking slack coal, usually 15 to 35% of the iron ore. Water is added to the mixture to make a paste, with the addition of a small quantity of plasticizer, if required. The mix is briquetted or extruded to desired shapes. The moulded shapes are charged into a suitable furnace in three different zones with temperatures ranging from 300 to 1100°C. The moulded shapes during passage through the furnace undergo a series of sequential reactions, namely induration, reduction and incipient fusion. Sponge iron is formed as a consequence, which is progressively cooled and discharged into a close chamber with reducing atmosphere. The metallization of the sponge iron produced varies from 70 to 92%, the carbon content being only in the range of 0.22-1.00%. □

Chloroquin Phosphate Production: Techno-economic Studies by RRL-Jorhat

The Regional Research Laboratory (RRL), Jorhat, which had entered into a collaborative agreement with the Bengal Immunity Co. (BIC), Calcutta, to improve the techno-economic viability of a process for manufacture of chloroquin phosphate, completed the process re-standardization studies on a laboratory scale. Confirmatory trials for about half of the process steps were also completed for a 4-tonne per annum capacity plant. The work on basic engineering package is being carried out and the design information is expected to be transferred to BIC soon in stages. The agreement also covers preparation of basic engineering designs for 80 tonnes/annum plant.

An antimalarial, chloroquin phosphate is also used for extra-intestinal amoebiasis. During 1978-79 India imported about 335 tonnes of the drug at a cost of Rs 100 million. The demand during 1982-83 is estimated at 580 tonnes, whereas the present licensed capacity is only 176 tonnes out of which the country produces only 40 tonnes.

BIC had set up a chloroquin phosphate plant of 4 tonnes/annum capacity in 1955 but owing to economic nonviability of the process the production had to be discontinued in 1977. □

Electrolytic Chromium

For producing chromium powder suitable for the preparation of special-type welding rods, the Central Electrochemical Research Institute (CECRI), Karaikudi, has developed a process. The process consists in depositing chromium in the form of brittle sheets from chromic acid, containing a known amount of sulphate ions, on pretreated stainless steel cathode. The deposited chromium is stripped and powdered. The chromium powder is about 98.5% pure and is suitable for manufacturing welding electrodes.

Capital investment for a plant of 22.5 tonnes/annum capacity has been estimated at Rs 26.00 lakh, and the cost of production works out to Rs 140/kg, the return on investment being 17%.

The present consumption of chromium powder by welding electrode manufacturers is around 75 tonnes, and for the manufacture of special alloys containing chromium, 20 tonnes. □

NIO Detects Increasing Oil Pollution in Arabian Sea

During a cruise of *R.V. Gaveshani* of the National Institute of Oceanography, Goa, along the oil tanker route off the west coast of India and within the Exclusive Economic Zone of the country during March 1981, heavy accumulations of tar balls were seen floating in the sea. The nearest point of observation was 37 nautical miles from the coast and the farthest, 168 nautical miles.

Regular monitoring along the oil tanker route by NIO scientists showed an accumulation of nearly 3700 to of floating tar particles per year in surface waters of the Arabian Sea. the last three years the concentratio the floating tar in the sea has incre several-fold. The oil present in the will affect the living resources of Arabian Sea and it seems very desir to exercise measures to reduce pollution.

NIO Records High Sea-Surface Temperatur in Arabian Sea

During its 91st cruise, *R.V. Gaveshan* the National Institute of Oceanograp Goa, recorded very high sea-surf temperature of the order of 33.8°C in Arabian Sea about 200 nautical m off Goa. This is the first time that suc high sea-surface temperature has b observed in this region.

In the east central Arabian Sea, h sea-surface temperatures ranging fr 32.0 to 33.8°C were noticed at 13°4 and 70°31′E on 26 April 1981 from no to evening in the calm sea. Scientists board the ship recorded the temperat every three minutes covering about km² to delineate the boundaries of warm-water surface area. Altern bands of mirror-like sea surfaces w associated with high temperatures, a rippled surfaces with lower tempe tures. The high temperature is presum to have a direct bearing on the ensu southwest monsoon.

Biological Activities of Interferon-like Factors of Indigenous Plants

Shri M.N. Joshi, of the Division Virology of the Central Drug Resea Institute, Lucknow, has tested extra of a large number of plants belonging 48 genera and collected from differ parts of the country for interferon-l antiviral activity against Ranik disease virus and vaccinia virus in tiss culture systems. Activity was found 22.3% of the extracts. Plants of lo groups (conifers and ferns) and of high groups (monocots and dicots) show

. In general, only one species of a vas found to be active, e.g. *Ficus a*, *Syzygium caryophyllum*, *n xanthocarpum*, *Moringa olei-*nd *Aegle marmelos*. In some however, activity was present in than one species, e.g. *Rhus*, *s*, *Acacia*, and *Polygonum*. s of 19 plants, which include *tenuifolius*, *Quercus lamellosa*, *ia somnifera*, and *Costus spe-* could inhibit multiplication of pes of viruses.

degree of activity varied in nt parts of the plant; maximum was noted in the aerial parts. y was greatest in plants collected summer (May-June) and least in collected during rainy season ugust).

interferon-like anti-viral factor(s) d from the plants was heat-stable, alyzable and could be stored at C for one year (Chick interferon rates within 4 to 6 months). ctor(s) could be destroyed in 1 hr 25% trypsin.

se studies have opened up the lity of using some wild plants of arent economic vaue as antiviral in treating different viral diseases is now necessary to find out the ions responsible for induction of al properties in plants.

Joshi, who conducted the studies the guidance of Dr O.P. Babbar same division of CDRI, was ed Ph.D. degree in botany by the University for his thesis based on udies. □

chemical Studies on Lipid Peroxidation in Lungs

with its unique location of direct ure to environment and a large e area, serves as a target organ for stemic entry of a large number of us agents. Many of these pol-s have oxidative properties and about derangement of lung hology and function by their tial to increase the output of lipid ides.

As part of its R&D programme to study pulmonary response to industrial dusts, the Industrial Toxicology Research Centre (ITRC), Lucknow, has investigated the peroxidative decomposition of unsaturated lipids in lungs of normal rat and as a result of stress induced by some particulate pollutants.

The studies carried out by Shri Ghan Shyam Das Gupta, under the guidance of Dr C.R. Krishna Murti and Dr J.L. Kaw of ITRC, have shown the presence of an inhibitor of lipid peroxidation in lungs of normal rat. The inhibitory activity was found to be organ specific and species non-specific.

The factor responsible for such inhibition was located mainly in the soluble fractions. It was found to be heat-stable, non-dialyzable and stable under frozen conditions for six months. The activity could be precipitated by ammonium sulphate and concentrated by dialysis against powdered sucrose.

Lyophilization, treatment with chloroform-methanol mixture, proteolytic digestion with pronase and papain and passage through Sephadex gel, however, resulted in a loss of the inhibitory activity.

Solubilization of the inhibitory activity by the use of various buffer systems failed to yield satisfactory results. However, thermostable inhibitory activity could be recovered in soluble phase by mild treatment with alcohol-ether mixture. The crude soluble phase revealed the presence of proteins, lipids, carbohydrates and sialic acids. Phospholipids and aminophosphatides comprised the major chemical entities.

Extraction of the inhibitory factor from lungs *in situ* with hypertonic saline solution, using lavage technique, proved very satisfactory in getting the inhibitory activity free from other tissue constituents. The inhibitory activity of lavage and whole lung tissue possessed similar properties and appeared to be identical.

Further characterization of the inhibitory factor showed it to be neither related to surfactant system nor to superoxide dismutase. The results of the present studies indicate that it is probably protein or peptide. The structural integrity of some chemical entity as a whole, similar in structure to either glycoproteins or lipoproteins, or the presence of some functional groups attached to the protein or lipid moieties of the high molecular weight substance, seems to play an important role in manifesting the inhibition of lipid peroxidation of brain tissue homogenate. Stability studies indicate the factor to be non-enzymic in nature.

The status of the inhibitor was further investigated in experimental silicosis, characterized by enhanced pulmonary fibrosis. Rats, chosen as experimental animals, were sacrificed after 360 days and the pattern of lipid peroxidation was studied. An enhancement of lipid peroxidation, even in the presence of the observed physiological inhibitor, was observed during development of experimental silicosis. Interaction of silica with the inhibitory factor probably takes place *in situ* so as to render the inhibitory activity ineffective or denatured, leading to disruption of the membranous structures of lung vasculture resulting in enhanced lipid peroxidation.

The findings would be useful in the understanding of the pathogenesis of lung diseases produced by different toxicants. The inhibitory activity may play a role in the prognosis and therapy of pulmonary diseases.

For his thesis based on the work Shri Das Gupta was awarded Ph.D. degree (1981) in biochemistry by the Lucknow University. □

Applied Botany Abstracts

This is the title of a new quarterly abstracting journal started by the National Botanical Research Institute (NBRI), Lucknow.

The journal covers world literature on R&D work aimed at the utilization of wild and non-agricultural/non-traditional/under-utilized economic

plants and plant products and development of production technologies for new plant sources of useful products. Contains information on such vitally important groups of plants and emerging areas of topical interest as: biomass/energy plants for fuel crops, petro-/alcohol-crops, latex and lubricant crops; plants and environmental pollution; traditional herbal drugs; ethnobotany; endangered/threatened plants; non-agricultural/under-utilized plants for non-edible oils and waxes, proteins and amino acids, starches and sugars, gums, mucilages and resins, fibres and other cellulose products; and ornamental plants and miscellaneous economic plants.

The first issue (March 1981) contains 225 abstracts, an exhaustive keyword index and an author index, besides a list of 225 journals consulted for the issue. It also notices 13 new books and three new journals in the fields of its interest, in addition to reviewing extension bulletins and other publications brought out recently by NBRI.

The inaugural issue of the journal was formally released by Prof. A.K. Sharma, Ghosh Professor of Botany, Calcutta University, Calcutta, and chairman of NBRI's research advisory council, at a function held at the institute on 10 April 1981.

The journal carries an annual inland subscription of Rs 50 and a foreign subscription of £10.00/$20.00. A single copy costs Rs 15/£3.00/$8.00.

For enlisting subscriptions to the journal, enquiries may be addressed to the Director, or Head, Economic Botany Information Service, National Botanical Research Institute, 2 Rana Pratap Marg, Lucknow 226001. □

Directory of Environmental Institutions in ESCAP Region

Based on a survey carried by the National Environmental Engineering Research Institute (NEERI), Nagpur, on behalf of the United Nations Environment Programme (UNEP), Nairobi, the latter has brought out a 'Directory of institutions in the ESCAP region active in environmental quality monitoring'. The directory will be useful in the successful implementation of the Global Environmental Monitoring Systems (GEMS) programme launched by the World Health Organisation.

The data presented in the directory include information collected from 12 countries in the south-east part of the ESCAP region: Afghanisthan, Bangladesh, Bhutan, Burma, India, Indonesia, Malaysia, Maldives, Nepal, Philippines, Singapore and Sri Lanka. The information pertaining to institutions has been arranged alphabetically, and countrywise under the two separate sections for each country: (i) Air quality monitoring, and (ii) Water quality monitoring. Information with regard to research programmes, personnel, equipment and other capabilities, which are essential for participation in the GEMS programme, is also included.

Request for a copy of the directory may be addressed to: United Nations Environment Programme, Office of Geneva, Palais de Nations, 1211 Geneva 10, Switzerland. □

PROGRESS REPORTS

CMRS Annual Report 1979-80

The annual report of the Central Mining Research Station (CMRS), Dhanbad, for 1979-80, brought out recently shows that the laboratory had on hand 42 in-house projects and 52 sponsored projects and took up 73 sponsored projects during the year. The laboratory helped the coal mining industry in effecting conservation of more than 5 million tonnes of coal up to 1979-80 by way of extraction of coal seams from underneath surface features and structures, such as railway lines, buildings, villages and highest flood level, without damaging seriously the surface structures and endangering underground workings. A typical example is the Sudamdih project of the Bharat Coking Coal Ltd, where more than 1 million tonnes of coal were extracted from seams underneath a main railway without disturbing its operation d 1971-80, when the railway line was to subside by 396 mm. In areas w complete extraction underneath su features was not feasible, pa extraction was resorted to. For purpose, it was necessary to dev methods for determining the adeq size of pillars after investigating t *situ* properties of coal in the seams. equivalent material mine mode technique was also used for decidin feasibility of extraction of coal seams under adverse conditions.

To support mine roadways and roads, CMRS has developed sev rock bolting techniques/equipment as roof bolts, roof stiching, side stic and bamboo bolting. These have found to be more effective and che than the conventional supports. clamps developed by the laboratory quick setting of cross bars in deve ment galleries were tested successful East Basuriya and Gandoodih colle of Bharat Coking Coal Ltd. Immed support could be provided in development workings and each cla could take a minimum load of tonnes. On the advise of the Directo General of Mines Safety these cla are now being used extensively in a la number of coal-mines.

Similarly, the quick-setting sc props, designed and developed by laboratory with a view to replacing conventional wooden props, were fi tested successfully.

A triaxial strain cell was designed determining the *in situ* ground stres order to design a safe mine structure prototype fabricated was being ca rated to make the system ready actual use.

Investigations were being made recover copper values from the lo grade ores of chalcopyrite by bacte leaching. The cultures of *Thiobaci ferrooxidans* were purified by a recult ing method and the effect of ammoni sulphate, *p*H, temperature, etc. on th leaching rate was studied. A strain of

idans tolerant to 0.5 *M* copper
e was developed and the growth
strain studied by ultrasonic
. A bench-scale study on the
g of low-grade copper ore was
de.

growth of *Methanomonas me-*
was studied for its possible use in
terial oxidation of methane in
ams. A bacterial colony of *M.*
ica was developed. Experiments
ted on degassification of Swang
of CCL with the bacterium gave
aging results. Intrinsically safe
nication systems for mines using
and auto-exchanges were
d and developed. The exchanges
peration in two collieries.

lant was developed to retard the
idation, and it was successfully
sted in Sudamdih, Girmint and
e collieries of BCCL.

ust arrestor for large-diameter
ole drilling in mines and quarries
en designed. The use of the
r reduces the airborne dust
the drill by about 98%. The
tory has also developed a dust
or and a dust respirator. The
tor filters out the micron-sized
ery efficiently without causing
breathing resistance. Its know-
has been released for
rcialization.

laboratory continued to carry out
dies relating to strata behaviour
upport parameters of longwall
stabilization of pillars, caving
teristics of seams, bearing ca-
of roof and floor, ventilation
and planning, strata control,
subsidence, deep hole blasting,
destructive testing, etc.
gations were made into the
failure of components used in
and allied industries.

financial inputs of the laboratory
79-80 were Rs 78.766 lakh and its
gs about Rs 18.053 lakh. □

Deputation Briefs

G. Mathew, head of the Food
on of the Regional Research
atory, Trivandrum, visited USA from 13 April to 17 May 1981, under the National Science Foundation—CSIR exchange of scientists programme. The main centre of his visit was the Department of Food Science and Technology, Colorado State University, Fort Collina, where he acquainted himself with the latest trends in research on post-harvest technology of foods. He also visited a number of food industries, and the Solar Energy Research Institute in Golden, Colorado.

Visiting the Oklahoma State University, Stillwater; Western Regional Research Centre, USDA, Albany, California; and Citrus and Sub-Tropical Products Laboratory, USDA, Winter Haven, Florida, Dr Mathew had discussions with Prof. George R. Waller, Dr Roy Teranishi and Dr Philip E. Shaw, respectively of these centres, on various aspects of food technology. Dr Mathew also gave lectures on the technology of spices, and plantation products in the research and educational centres which he visited. □

* * *

Dr (Miss) S.B. Kulkarni of the National Chemical Laboratory, Pune, was deputed to USA under the CSIR-NSF exchange of scientists programme (30 Oct.-6 Dec. 1980). She studied the acidity of zeolites catalysts by temperature programme desorption of ammonia using a quadrupole mass spectrometer at the University of Utah and examined the zeolite structure by X-ray and scanning electron spectroscopy at the Worcester Polytechnic, Massachusetts. She also visited the Zeopower Company, which is making solar refrigerators using natural zeolites and solar collectors. □

* * *

Shri K.K. Das of the National Environmental Engineering Research Institute (NEERI), Nagpur, was deputed to Sweden on a FAO fellowship under a UNDP project on 'Exploration and identification of alternative raw materials for paper and newsprint manufacture', in cooperation with NEERI and Indian pulp industry. He received practical training in the evaluation of effluents and new pollution abatement technology in the pulp and paper industry at the Swedish Water and Air Pollution Research Institute (IVL), Stockholm, from 15 September to 14 December 1980. Shri Das studied the various modern techniques followed at IVL for analysis of water and wastewater samples. IVL showed considerable interest in the work being done at NEERI and a collaborative project to be funded by SAREC (Swedish Agency for Research Co-operation with Developing Countries) is being proposed by IVL. □

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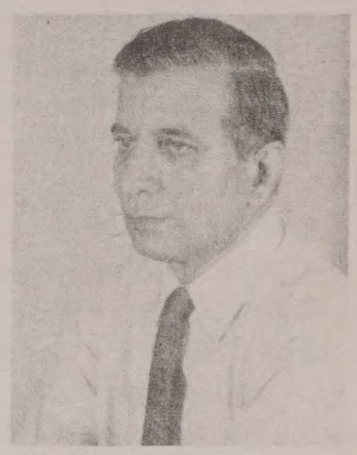
PERSONNEL NEWS

Dr Varadachari
Acting Director of NIO

Dr V.V.R. Varadachari, Deputy Director, National Institute of Oceanography (NIO), Goa, has been appointed Acting Director of NIO



consequent upon Dr S.Z. Qasim's taking over as Secretary to the Government of India in the Department of Environment (14 May 1981).

Dr Varadachri (born 1 July 1925) has a D.Sc. degree in oceanography and has contributed as a teacher, scientist and administrator for the last three decades. He has organized and led several oceanographic cruises since 1952. He joined the International Indian Ocean Expedition in 1963 and has been heading the Physical Oceanography Division of NIO since its inception (1 Jan. 1966). He became Deputy Director in 1974.

Dr Varadachari is a Fellow of the Indian National Science Academy and

the Indian Academy of Sciences [*See also CN*, **30** (1980), 167]. □

Appointments/Promotions

Dr V.M. Nadkarni

Dr V.M. Nadkarni has been appointed Scientist EI in the Chemical Engineering Division of the National Chemical Laboratory (NCL), Pune (8 Jan. 1981).

Dr Nadkarni (born 6 Dec. 1947) has had a brilliant academic career. He obtained his B. Chem. Eng. (1969) from the Bombay University, M. Chem. Eng. (1972) from the University of Delaware, USA, with research thesis on solid state polymerization, and Ph.D. (1974), also from the University of Delaware for his research on the effect of extensional flow on polymer crystallization.

He worked for about four years at the Du Pont Experimental Station, Wilmington, Delaware, as a senior research engineer. Prior to joining NCL he was with the Owens-Corning Fiberglass Corporation, Granville, Ohio. During his association with these two firms he acquired wide research and managerial experience in spinning technologies for polyester, nylon, acrylic, glass and ceramic fibres; non-woven technology; extrusion of plastics; fibre-reinforced composite technology; design and operation of plastics processing equipment; and polymer and fibre characterization. He has several U.S. patents covering his work at both Du Pont and Owens-Corning.

He was a member of the Modern Plastics Management Advisory Panel of McGraw-Hill publications during 1979-80. □

Retirements

Dr B. Bheemeswar, Scientist C, Biochemistry Division, NCL, Pune, retired (31 Dec. 1980).

Honours & Awards

Dr S. Mallick of the International Hydrological Programme Unit has been nominated a member of the International Commission on Ground Water Protection. This is one of the commissions of the International Association of Hydrogeologists—a non-governmental, non-profit making scientific organization adhering to the International Union of Geological Sciences (IUGS) under ICSU. The commission is engaged in the preparation of a monograph on the effect of agricultural activity on ground water quality and quantity.

Dr Mallick attended the meeting of the commission held on 28 March 1981 at Amsterdam and also the International Symposium on Quality of Ground Water (ISQG '81).

Dr Amarjit Singh

Dr Amarjit Singh, Director, Central Electronics Engineering Research Institute, Pilani, has been appointed chairman of the coordination council for physical and earth sciences group of CSIR laboratories for a period of two years from 15 May 1981 to 14 May 1983 in place of Dr S.Z. Qasim. □

Shri C.P.N. Singh Visits NBRI

Shri C.P.N. Singh, Union Minister of State for Science & Technology, visited the National Botanical Research Institute (NBRI), Lucknow, on 29 March 1981. He was shown round the institute by its Director Dr T.N. Khoshoo. Shri Singh also visited the NBRI's exposition depicting its R&D activities on non-traditional, non-agricultural and under-utilized economic plants. The minister suggested that the institute should bring out literature for school children and masses to create awareness among them for maintaining ecological balance. □

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Advertisement No. 17/81

The Council proposes to appoint a Director for the Structural Engineering Research Centre, Roorkee. The prospective Director is expected to have high academic qualifications, an established reputation of excellence in research & development, and management capability of a high order. He should have a broad perspective of r the area of structural engineering and sh specialized in one or more of the followin current activity in the laboratory: structures, Bridges and long span structu rise buildings, Ferro-cement construct special problems of construction in north including hill areas.

He should be capable of providing hig scientific leadership in existing and emerg and should be able to enthuse younger c and establish close relationship with u should preferably be below 50 years of

The post of Director carries a scale Rs 2500-125/2-3000. A higher start ca given. This is a contractual appointmer years, with a two-year period of probat contract is renewable and the incumbent be confirmed in the post.

Those interested may kindly se *curriculum vitae* on or before 6 August 19 Chief (Administration), Council of Sci Industrial Research, Rafi Marg, Ne 110001, who will also provide on req annual report and brochure setting out and objectives of SERC, Roorkee.

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The Council proposes to appoint a Direct Regional Research Laboratory Trivandrum. The prospective Director is to have high academic qualificati established reputation of excellence in R management capability of a high order.

The present major areas of research Trivandrum include post-harvest techn plantation products; materials technolog on natural fibres; clays; elastomers; con agricultural and mineral based materials to the region; renewable resources for en local industries; and systems planni research management.

The prospective Director should hav liarity with one of these areas and be ca providing high-quality scientific leade interdisciplinary teams in existing and e areas.

He should preferably be below 50 yea candidates can be considered only in exc cases.

The post carries a scale of pay of Rs 250 3000. A higher start can also be given. T contractual appointment for 6 years with year period of probation. The cont renewable, and the person can also be co in the post.

Those interested may kindly send *curriculum vitae* on or before 13 August 198 Chief (Administration), Council of Scie Industrial Research, Rafi Marg, New 110001, who will also provide on requ annual report and a brochure setting out a objectives of RRL, Trivandrum.

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